

**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION**

R2 Solutions LLC,

Plaintiff,

v.

Expedia Group, Inc.,

Defendant.

Civil Action No. 6:21-cv-628

Jury Trial Demanded

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff R2 Solutions LLC files this Complaint against Expedia Group, Inc. for infringement U.S. Patent Nos. 7,698,329 (“the ’329 patent”), 8,190,610 (“the ’610 patent”), and 8,341,157 (“the ’157 patent”). The ’329 patent, ’610 patent, and ’157 patent are referred to collectively as the “patents-in-suit.”

THE PARTIES


1. Plaintiff R2 Solutions LLC (“R2 Solutions”) is a Texas limited liability company with a place of business at 6136 Frisco Square Blvd, Ste. 400, Frisco, Texas 75034.

2. Defendant Expedia Group, Inc. (“Expedia Group”) is a Delaware corporation with a principal place of business located at 1111 Expedia Group Way W., Seattle, WA 98119. Expedia Group may be served with process through its registered agent, National Registered Agents, Inc., located at 1911 Bryan Street, Ste. 900, Dallas, Texas 75201.

3. Expedia Group calls itself “one of the world’s largest online travel companies.” See Expedia Group 2020 10-K at 2. It offers “a full range of travel and advertising services to its worldwide customers through a number of consumer brands that target a variety of customer

segments and geographic regions.” *Id.* The brands include Brand Expedia, Hotels.com, Travelocity, Vrbo, and Orbitz, among others. *Id.* Indeed, “[o]ver the past year, Expedia Group shifted to an operating model relying on centralized technology, product, data engineering, and data science teams” servicing all of its “business units.” *Id.* at 3. On information and belief, each of the brands under the Expedia Group umbrella share and benefit from the platform’s infrastructure, including data centers and search capabilities. *See, e.g.,* Kayla Chance, *9 Things You Didn’t Know About Working at HomeAway*, <https://blog.lifeatexpediagroup.com/experiences/9-things-you-didnt-know-about-working-at-homeaway/> (explaining that because HomeAway is part of Expedia Group, you get “access to lots of data”).

4. Individuals employed by Expedia Group (or its business units) work to align products and services across all business units with the unified vision that Expedia Group directs:

 **Sr. Email Campaign Manager**
Travelocity
Mar 2019 - Present · 2 years 4 months
Dallas, Texas
Plan, strategize and optimize email marketing campaigns, oversee the campaign calendar, schedule A/B tests and analyze results. Manage template enhancements and updates for all communications (promotional/lifecycle/triggered) with a focus on pulling in dynamic and personalized content. Collaborate cross functionally with a variety of teams across the Expedia Group portfolio such as Brand, Merchandising, and Mobile to align on customer journey, user experience, campaign cohesiveness, past learnings, etc.

LinkedIn Profile of Alison Franco, <https://www.linkedin.com/in/alisonfranco>.



Expedia Group

4 years 4 months

Director of Product Management

Mar 2021 - Present · 4 months

Chicago, Illinois, United States

Leading our efforts to externalize our lodging product... More to come!

Senior Product Manager - Lodging Shopping

Feb 2019 - Mar 2021 · 2 years 2 months

Greater Chicago Area

- Led team of 2 product managers to drive the lodging business' pricing, vacation rental expansion, and more at over 30 global points of sale
- Crafted data and machine learning (ML) strategy, which led to an increase in number of ML algorithms implemented for the Lodging team by 100% by end of 2020
- Aligned with Expedia Group brands (Expedia, Hotels.com, VRBO) to create a unified approach for ML asks to drive scalability and continuity
- Created a culture of learning by sharing insights from all lodging tests in a templated manner, leading to collaboration among over 450 team members

LinkedIn Profile of Stephen Brieloff, <https://www.linkedin.com/in/stephenbrieloff>.

5. Furthermore, Expedia Group builds and maintains a variety of technology for use by all of its brands:



Expedia Group

14 years 2 months

Director Of Technology

Jan 2019 - Present · 2 years 6 months

Seattle, Washington, United States

Technology Leader for Expedia's Lodging Booking Services Group that fulfills and captures all Expedia hotel bookings across all Expedia brands. Team also manages supplier to customer conversations on email, push & SMS channels

LinkedIn Profile of Abhinav Agrawal, <https://www.linkedin.com/in/abhinavag>.



Expedia Group

3 years 2 months

Vice President, Technology

Sep 2020 - Present · 10 months

Seattle, Washington, United States

Expedia Conversation Platform, Intelligent Conversational Experiences

Senior Director, Platform Engineering

May 2018 - Sep 2020 · 2 years 5 months

://www.linkedin.com/in/anushk

2/13

/2021

Anush Kumar - Vice President, Technology - Expedia Group | LinkedIn



Anush Kumar



that delivers intelligent virtual Agents for automated self-service at scale, serving Travelers and Agents at the intersection of voice, chat, social and agent tooling for contact centers.

End solution is being employed across all of EG's brand sites, strategic external partners & contact center tools, delivering \$100+M in annualized savings.

LinkedIn Profile of Anush Kumar, <https://www.linkedin.com/in/anushk>.

Senior Vice President Enterprise Risk & Security, CISO

Mar 2018 - Nov 2019 · 1 year 9 months

Greater Seattle Area

Responsible for providing vision, strategy, broad-based planning along with operational control of the enterprise information security program, fraud mitigation program and various compliance programs. Leading a large global team of professionals Mr. Montague is responsible for protecting Expedia brands worldwide from financial loss and or brand damage across all brands and channels from unauthorized access, misuse, destruction or fraudulent activity from consumer services, suppliers, affiliates, partners and loyalty programs worldwide. Includes strategic planning, product management, technology development, operations and P&L.

- 200 plus global brands to include: Expedia, Hotels.com, Orbitz, HomeAway, VRBO, EAN, Cheaptickets.com, Egencia, Travelocity, Hotwire, AirAsia, wotif

Show less ^

LinkedIn Profile of David Montague, <https://www.linkedin.com/in/davidmontague>.

**Lead Statistician**

Expedia Group

May 2020 - Present · 1 year 2 months

Leading the transformation of the end-to-end statistical/experimental methodology (and culture) across Expedia Group. This has involved many interesting tasks and opportunities some notable:

- Presenting on experimental methods and culture to a wide range of stakeholders (from small meetings with product and tech senior leadership, to large 100+ person sessions with product, analytics and tech stakeholders)
- Mentoring, training, and ongoing product support (from our experimentation tools, to data pipelines, to statistics and experiment design) to stakeholders across the org (e.g. analytics, product and engineering)
- Working with engineers across multiple tech stacks to learn about how all Expedia brands do testing (e.g. their experimentation SDKs/Services, data pipelines, and statistical readout capabilities) and then turning that information into common product features optimized for experimentation at scale.

Works with experimentation platform engineering to onboard teams brand new to experimentation. Tasks include mentoring PMs and Product engineers on testing best practices, building the right data pipelines, and writing experimentation readout scripts from scratch in PySpark.

LinkedIn Profile of John Meakin, <https://www.linkedin.com/in/john-meakin>.

**Expedia Group**

6 years 10 months

Director, Software Development

Jun 2019 - Present · 2 years 1 month

Responsible for Big Data and Machine Learning platform for Enterprise Risk and Security, technology direction, planning, strategy, delivery, and MBR/QBR reporting. Covering merchant payment fraud, account takeovers, and supplier fraud.

Software Development Manager

Aug 2017 - Jun 2019 · 1 year 11 months

Greater Seattle Area

Took ownership of Data and Machine Learning platform to train, deploy, and run machine learning models at scale for Enterprise Risk & Security group. Leading highly motivated and talented technical team.

Senior Technical Program Manager

Sep 2014 - Aug 2017 · 3 years

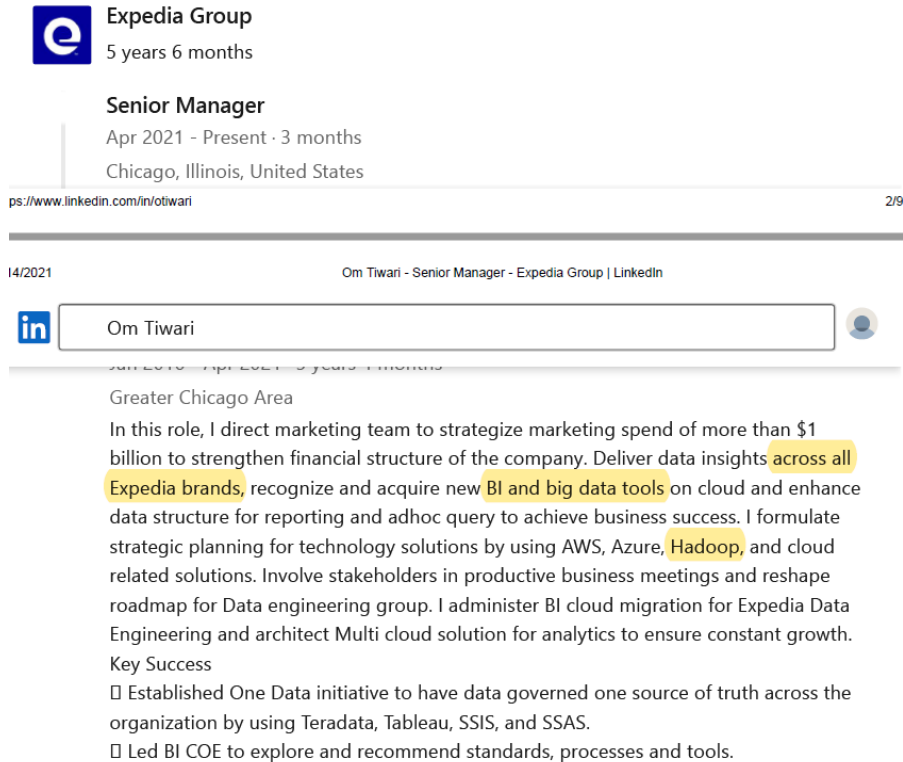
Greater Seattle Area

Drove requirements/scope definition, planning, consensus on design, ensured development and testing on track/no blockers, managed deployment/launch for the key technology initiatives to identify and mitigate risk and losses globally across all Expedia brands.

LinkedIn Profile of Marina Rubtsova, <https://www.linkedin.com/in/rubtsova>.

6. The technology that Expedia Group develops and implements across all of its brands and business units includes software accused of infringing the patents-in-suit, such as big data tools involving Hadoop:

Experience



Expedia Group
5 years 6 months

Senior Manager
Apr 2021 - Present · 3 months
Chicago, Illinois, United States

ps://www.linkedin.com/in/otiwari 2/9

14/2021 Om Tiwari - Senior Manager - Expedia Group | LinkedIn

Om Tiwari

Greater Chicago Area

In this role, I direct marketing team to strategize marketing spend of more than \$1 billion to strengthen financial structure of the company. Deliver data insights across all Expedia brands, recognize and acquire new BI and big data tools on cloud and enhance data structure for reporting and adhoc query to achieve business success. I formulate strategic planning for technology solutions by using AWS, Azure, Hadoop, and cloud related solutions. Involve stakeholders in productive business meetings and reshape roadmap for Data engineering group. I administer BI cloud migration for Expedia Data Engineering and architect Multi cloud solution for analytics to ensure constant growth.

Key Success

- Established One Data initiative to have data governed one source of truth across the organization by using Teradata, Tableau, SSIS, and SSAS.
- Led BI COE to explore and recommend standards, processes and tools.

LinkedIn Profile of Om Tiwari, <https://www.linkedin.com/in/otiwari>.

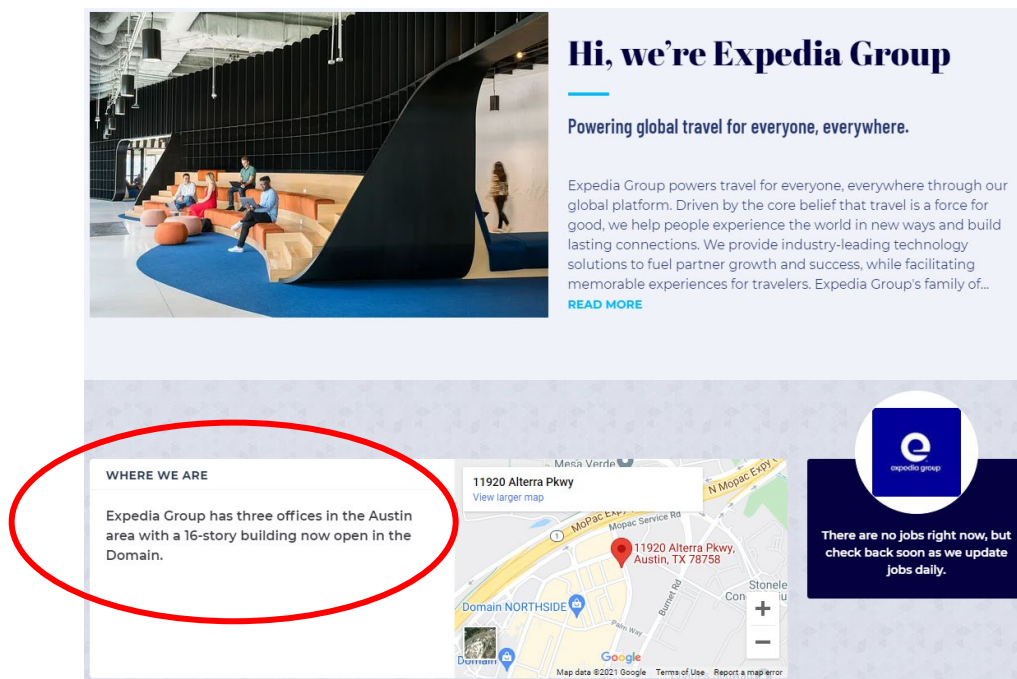
7. Expedia Group also exercises control over the staffing of its brands. For example, in 2020 Expedia Group announced that it would layoff 12 percent of its “direct workforce.”

Dennis Schaal, *Expedia Group Begins Layoffs Targeting 12 Percent of Its Workforce*, SKIFT (Feb. 24, 2020), <https://skift.com/2020/02/24/expedia-begins-layoffs-targeting-12-percent-of-its-workforce/>. The day after this announcement, Expedia Group business unit, Vrbo, terminated dozens of employees in this District. Matthew Mershon, *Employees Remain Optimistic Following Layoffs at Expedia Group, VRBO Offices*, <https://spectrumlocalnews.com/tx/austin/news/2020/03/06/employees-remain-optimistic-following-layoffs-at-expedia--vrbo->

offices-#. One former employee explained that this was directly related to Expedia Group's transition to a centralized business model: "We all knew when we changed from a bunch of companies within a group competing against each other to a more cooperative format throughout the organization, there'd be some redundancies." *Id.* Thus, Expedia Group business units do not possess any particular independence. They make corporate decisions, like workforce size, at Expedia Group's direction and control.

8. Thus, based on information and belief, the Expedia Group portfolio of brands are the agents, managing agents, and alter egos of Expedia Group.

9. On information and belief, Expedia Group has a regular and established place of business in this District at 11920 Alterra Pkwy., Austin, Texas 78758:

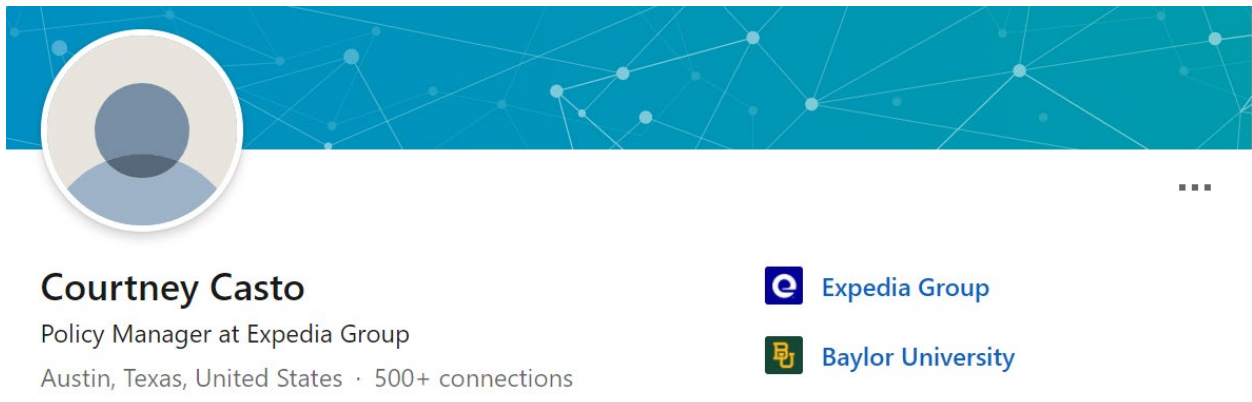


<https://www.builtinaustin.com/company/expedia-group>. In addition to being the headquarters for its VRBO unit, Expedia Group holds this location out as its own:

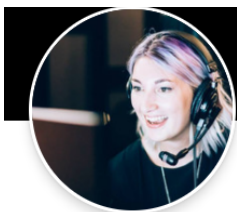


<https://spectrumlocalnews.com/tx/austin/news/2020/03/06/employees-remain-optimistic-following-layoffs-at-expedia--vrbo-offices-#>.

10. On information and belief, numerous Expedia Group employees work in the Austin, Texas office:



<https://www.linkedin.com/in/courtneyrobertscasto>.



Alyssa White, PhD

Director of Research at Expedia Group

Austin, Texas, United States · 500+ connections



Expedia Group



University of Central Florida

Experience



Director of Research

Expedia Group

May 2021 - Present · 1 month

Austin, Texas, United States



Vrbo

2 years 1 month

- **Sr. Research Manager, UX Measurement and Foundations**

Aug 2020 - May 2021 · 10 months

Austin, Texas, United States

- **Lead Researcher, Measurement and Foundations**

May 2019 - Aug 2020 · 1 year 4 months

Austin, Texas Area

HomeAway is now Vrbo, part of the Expedia Group family!

<https://www.linkedin.com/in/alyssaswhite>.



Evan Levin

Transport Strategy & Transformation at Expedia Group
Austin, Texas, United States · 500+ connections

 **Expedia Group**

 **The University of Texas at Austin**

Experience



Expedia Group

1 year 5 months

- **Senior Analyst, Strategy & Transformation (Transport)**
Apr 2021 - Present · 2 months
- **Transport Analyst, Strategy & Transformation**
Dec 2020 - Mar 2021 · 4 months
- **Partner Success Strategy Analyst (Vrbo)**
Jan 2020 - Nov 2020 · 11 months



Partner Success Strategy Analyst

Vrbo

Jan 2020 - Dec 2020 · 1 year

Austin, Texas Area

<https://www.linkedin.com/in/evan-levin>.

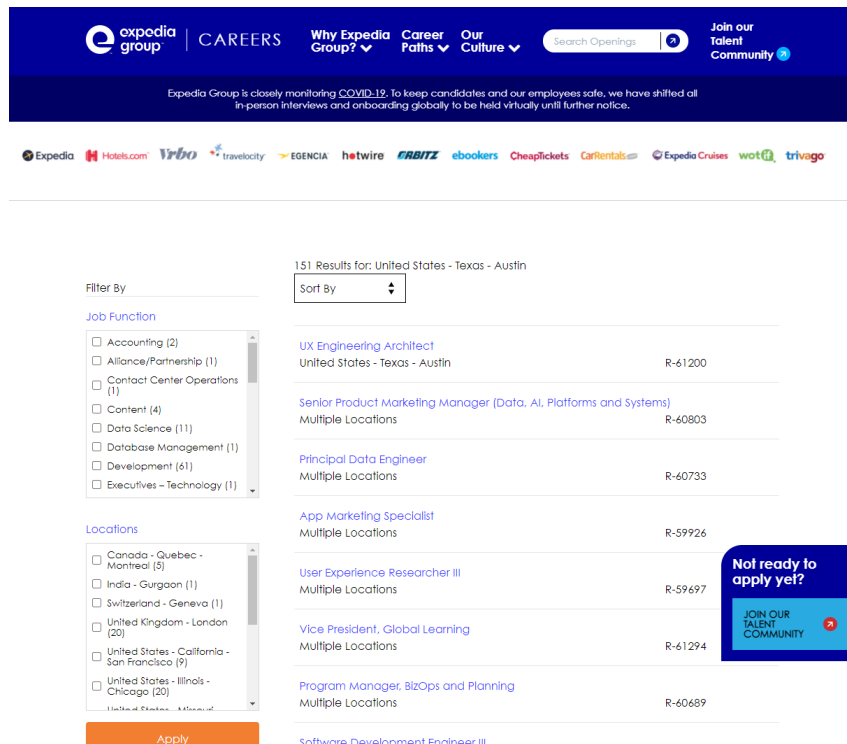
11. Some of the employees who currently list Expedia Group as their employer previously listed “Vrbo” as their employer at the same location. These employees either switched employer from HomeAway.com, Inc. (d/b/a. Vrbo), or these employees edited their publicly-available LinkedIn profiles to show Expedia Group as their employer at the request of Expedia Group.

12. Expedia Group continues to engage lobbyists in this District to influence Texas politics. *See* Ex. 1 at 160.

JURISDICTION AND VENUE

13. This action arises under the patent laws of the United States, 35 U.S.C. § 101, *et seq.* This Court’s jurisdiction over this action is proper under 28 U.S.C. § 1331 (federal question jurisdiction) and 28 U.S.C. § 1338 (jurisdiction over patent actions).

14. This Court has personal jurisdiction over Expedia Group in accordance with due process and/or the Texas Long Arm Statute because, among other things, Expedia Group does business in this State by, among other things, “recruit[ing] Texas residents, directly or through an intermediary located in this state, for employment inside or outside this state.” TEX. CIV. PRAC. & REM. CODE § 17.042(3):



<https://lifeatexpediagroup.com/jobs?location=United%20States%20-%20Texas%20-%20Austin>.

15. Further, this Court has personal jurisdiction over Expedia Group because it has engaged, and continues to engage, in continuous, systematic, and substantial activities within this State, including the substantial marketing and sale of products and services within this State and this District. Indeed, this Court has personal jurisdiction over Expedia Group because it has committed acts giving rise to R2 Solutions' claims for patent infringement within and directed to this District, has derived substantial revenue from its goods and services provided to individuals in this State and this District, and maintains regular and established places of business in this District, including at least Expedia Group's corporate offices in Austin.

16. Relative to patent infringement, Expedia Group (itself and through direct control of its brands and business units) has committed, and continues to commit, acts in violation of 35 U.S.C. § 271, and has made, used, marketed, distributed, offered for sale, and/or sold infringing products and services in this State, including in this District, and otherwise has engaged in infringing conduct within and directed at, or from, this District.

17. Such infringing products and services include: (1) the Expedia Group data analytics system built on Apache Hadoop (which, on information and belief, is used by all of the Expedia Group brands and business units); (2) the Expedia.com search engine; and (3) the Travelocity.com search engine. All such infringing systems are hereinafter referred to collectively as the "Expedia Group Systems." Such Expedia Group Systems have been, and continue to be, made, offered for sale, distributed to, sold, and/or used in this District, and the infringing conduct has caused, and continues to cause, injury to R2 Solutions, including injury suffered within this District. These are purposeful acts and transactions in this State and this District such that Expedia Group reasonably should know and expect that it could be haled into this Court because of such activities.

18. On information and belief, Expedia Group customers use Expedia Group search engines in this District in an infringing manner. For example, customers and users in this District search for content on Travelocity.com and, in so doing, exert control over the computer readable medium that is capable of executing the methods described in the claims of the '157 patent. *See, e.g.*, Ex. 7 at Slides 5–8 (“receiving, over a network, a query from a user”). Search results are transmitted for display on the customer’s or user’s web browser using network infrastructure in this District. Such Expedia Group customers and users in this District obtain beneficial enjoyment of the Travelocity.com search engine. *See, e.g.*, Ex. 7 at Slide 31 (“transmitting the result, over the network, to the user”).

19. Venue is proper in this District under 28 U.S.C. §§ 1391 and 1400(b) because Expedia Group has regular and established places of business in this District and has committed, either directly or through its agents and alter egos, acts of infringement in this District. Expedia Group’s regular and established places of business in this District include, at least, its Austin, Texas corporate offices. Indeed, Expedia Group conducts business in this District, including marketing and offering the Expedia Group Systems to customers located in this District. Expedia Group’s activities, or the actions of the Expedia Group Systems, in the District satisfy one or more elements claimed in, and by, the patents-in-suit.

BACKGROUND

20. The patents-in-suit were filed by Yahoo! Inc. (“Yahoo!”) between 2006 and 2009. At the time, Yahoo! was a leading Internet communications, commerce, and media company. Yahoo! invested billions of dollars in research and development over this period, filing hundreds of patent applications each year to cover the innovative computing technologies emerging from its expansive research and development efforts.

21. Yahoo! began as a directory of websites that two Stanford graduate students developed as a hobby. The name “Yahoo” stands for “Yet Another Hierarchical Official Oracle,” a nod to how the original Yahoo! database was arranged hierarchically in layers of subcategories. From this initial database, Yahoo! would develop and promulgate numerous advancements in the field of data storage and recall.

22. For example, in 1995, Yahoo! introduced Yahoo! Search. This software allowed users to search the Yahoo! directory, making it the first popular online directory search engine. This positioned Yahoo! as the launching point for most users of the World Wide Web. By 1998, Yahoo! had the largest audience of any website or online service.

23. However, the early iterations of Yahoo! Search did not operate like a modern search engine because Yahoo! Search was only a directory. Yahoo! Search first integrated a Web crawling engine in 2000. Yahoo! Search used Google’s Web crawling engine from 2000–2004. During this time, Yahoo! was developing its own Web search technologies. Yahoo! deployed its own Web crawler in early 2004. The engine, known as Slurp, allowed Yahoo! to collect documents from the Web and build a searchable index. The patents-in-suit relate to innovations associated with Yahoo! Search that were developed and implemented during this period, which enabled Yahoo! to become Google’s biggest competitor in the search engine space.

THE PATENTS-IN-SUIT

24. The ’329 patent is entitled, “Method for Improving Quality of Search Results by Avoiding Indexing Sections of Pages.” The ’329 patent lawfully issued on April 13, 2010 and stems from U.S. Patent Application No. 11/652,356, which was filed on January 10, 2007. A copy of the ’329 patent is attached hereto as Ex. 2.

25. The '610 patent is entitled, "MapReduce for Distributed Database Processing." The '610 patent lawfully issued on May 29, 2012 and stems from U.S. Patent Application No. 11/539,090, which was filed on October 5, 2006. A copy of the '610 patent is attached hereto as Ex. 3.

26. The '157 patent is entitled, "System and Method for Intent-Driven Search Result Presentation." The '157 patent lawfully issued on December 25, 2012 and stems from U.S. Patent Application No. 12/533,299, which was filed on July 31, 2009. A copy of the '157 patent is attached hereto as Ex. 4.

27. R2 Solutions is the owner of the patents-in-suit with all substantial rights, including the exclusive right to enforce, sue, and recover damages for past and future infringements.

28. The specifications of the patents-in-suit disclose shortcomings in the prior art and then explain, in detail, the technical way the claimed inventions resolve or overcome those shortcomings. And, accordingly, the claims of the patents-in-suit are directed to patent eligible subject matter under 35 U.S.C. § 101. They are not directed to abstract ideas, and the technologies covered by the claims consist of ordered combinations of features and functions that, at the time of invention, were not, alone or in combination, well-understood, routine, or conventional.

29. The '329 patent explains that nefarious parties can trick traditional search engines "into recalling documents and inflating their ranking" using techniques known as "search engine spamming." '329 patent at 2:6–8. For example, spamming may be used to "trick search engine ranking algorithms into recalling and highly ranking documents that contain . . . sponsored links to a web merchant." *Id.* at 2:8–11. The result is that search results for many queries include

irrelevant content that the querier did not desire. *Id.* at 2:14–17. The specification offers an illustration involving a user shopping for a camera:

A typical example of search engine spam is when a user tries to search for the terms “digital camera reviews” and expects to find pages which review various models of digital cameras, detailing performance specifications, sample images and reviewer pros and cons list. Having this expectation when the user clicks on a link for one of the results, the user is instead led to a page that contains nothing but a plethora of keywords and links to other stores where he can buy the camera.

Id. at 2:18–27. Thus, “there is need for mechanisms that prevent hiding of search engine spam but yet allow webmasters to designate page content that should not be indexed.” *Id.* at 2:34–37.

30. The specification describes a novel approach to achieve this goal:

As a crawler examines an individual document, one of the attributes that can be considered is section structure. In examining the various sections, the crawler identifies sections to ignore, that is, to not index in search engine indexes and or otherwise use for recalling the document. Such sections are referred to herein as “no-recall sections.” Those portions that are indexed for recalling are referred to as recall sections. In an embodiment, a crawler ignores no-recall sections demarcated by, for example, a tag. In another embodiment a no-recall section may be identified by analyzing section content rather than examining only delimiters. The terms inside no-recall sections do not contribute to the document term frequency counts and are not used for recalling the documents in response to search engine queries. However the no-recall sections are included as input to forms of analysis of the document that affect, for example, the document’s ranking. Links inside the no-recall sections as well as the rest of the document may be followed in order to discover new content. The document may be analyzed for the amount of advertisements or other features in its entirety. Therefore, terms inside the no-recall sections can affect document ranking.

Id. at 3:7–27. This prevents nefarious parties from hiding search engine spam because pages with “copious amounts of advertisements, or low quality links, will be readily identified and ranked accordingly.” *Id.* at 3:28–31.

31. Claim 1 of the ’329 patent embodies this solution:

A method, comprising:

ranking a plurality of documents recalled by a search engine for a query;

wherein the plurality of documents contain certain documents, ***each document of said certain documents containing at least one section that is not used by said search engine for recall*** and one or more sections that are used by said search engine for recall;

wherein ranking a plurality of documents includes ranking said plurality of documents ***based, at least in part, on the at least one section of said certain documents not used by said search engine to recall documents***; and;

wherein the method is performed by one or more computing devices.

(emphasis added).

32. The claimed method of indexing pages improves navigation of the World Wide Web by increasing the relevance of search results and thwarting nefarious Web users seeking to game Web query rankings. *See, e.g., id.* at 1:67–2:17. By improving the functionality of the search engines, the claimed invention is necessarily rooted in the improvement of computer functionality rather than economic or other tasks for which a computer is used in its ordinary capacity. For example, by not ignoring no-recall sections when ranking the documents, the claimed invention prevents a document from being “designed so that content that increases recall and/or ranking potential is placed in the recall section and content that diminishes high ranking potential is hidden in a no-recall section.” *Id.* at 4:1–9. This allows “[a]ll the attributes in all of the sections of a document such as ‘links’, frequency of terms, coloring, font, etc.” to be considered in the spam and relevancy analyses. *Id.* at 4:13–16. The result is that a search engine

can “affect the recall and ranking of documents to more accurately reflect relevance of the documents to search engine queries.” *Id.* at 3:1–3.

33. Relative to the ’610 patent, the specification explains, for example, that “conventional MapReduce implementations do not have facility to efficiently process data from heterogeneous sources” and that “it is impractical to perform joins over two relational tables that have different schemas.” ’610 patent at 3:9–20. To solve these problems, the ’610 patent discloses an invention where user-configurable MapReduce functions are applied to data from heterogeneous data sources (having different schema), followed by application of a reduce function on intermediate data based on a common key. As the specification explains:

[T]he MapReduce concept may be utilized to carry out map processing independently on two or more related datasets (e.g., related by being characterized by a common key) even when the related data sets are heterogeneous with respect to each other, such as data tables organized according to different schema. The intermediate results of the map processing (key/value pairs) for a particular key can be processed together in a single reduce function by applying a different iterator to intermediate values for each group. In this way, operations on the two or more related datasets may be carried out more efficiently or in a way not even possible with the conventional MapReduce architecture.

Id. at 8:47–58.

34. Such a solution is embodied, for example, in Claim 1 of the ’610 patent:

A method of processing data of a data set over a distributed system, wherein the data set comprises a plurality of data groups, the method comprising:
partitioning the data of each one of the data groups into a plurality of data partitions that each have a plurality of key-value pairs and providing each data partition to a selected one of a plurality of mapping functions that are each ***user-configurable*** to independently output a plurality of lists of values for each of a set of keys found in such map function’s corresponding data partition to form

corresponding intermediate data for that data group and identifiable to that data group, *wherein the data of a first data group has a different schema than the data of a second data group* and the data of the first data group is mapped differently than the data of the second data group so that different lists of values are output for the corresponding different intermediate data, *wherein the different schema and corresponding different intermediate data have a key in common*; and

reducing the intermediate data for the data groups to at least one output data group, including processing the intermediate data for each data group in a manner that is defined to correspond to that data group, so as to result in a *merging of the corresponding different intermediate data based on the key in common*,

wherein the mapping and reducing operations are performed by a distributed system.

(emphasis added).

35. The inventions described and claimed in the '610 patent improve the speed, efficiency, effectiveness, and functionality of computer systems. Moreover, the inventions provide an improvement in computer functionality rather than economic or other tasks for which a computer is used in its ordinary capacity. For example, the '610 patent states that the disclosed inventions “enhance[] the utility of the MapReduce programming methodology.” *Id.* at Abstract, 1:31–33, 1:66–2:2.

36. The '610 patent specification goes on to explain that “[t]he intermediate results of the map processing (key/value pairs) for a particular key can be processed together in a single reduce function by applying a different iterator to intermediate values for each group.” *Id.* at Abstract, 1:37–39, 2:4–8. And the specification discusses the use of multiple processors to perform processing functions in parallel. *See id.* As a result, computer functionality is improved. *Id.* at 1:42–44.

37. Additionally, the claimed inventions provide for more dynamic, customizable, and efficient processing of large sets of data. *See, e.g., id.* at 2:58–61, 4:18–22. The inventions provide optimization, which increases efficiency and reduces processor execution time. *See id.* at 2:64–67 (explaining that the claimed invention “can make the processing of the output data more efficient and/or convenient”). As the specification describes, the combiner function in the claimed invention “helps reduce the network traffic and speed up the total execution time.” *Id.* at 3:1–8.

38. The specification also discusses the use of configurable settings to reduce processing overhead. *See, e.g., id.* at 4:60–62, 5:33–39.

39. Finally, the ’157 patent explains that if, as in the case of traditional search engines, the “engine simply regards a web query as, for example, a ‘bag of words’, the search engine will search for web pages and other data objects (e.g., images, audio files, text files) that contain, or are otherwise associated with, the individual words within the query.” ’157 patent at 4:1–5. However, simply treating a user query as a “bag of words” may yield results that do not align with the purpose of the user’s search. Thus, the specification teaches:

When a user submits a query to a web search service such as the Yahoo! or Google search services, the user generally has some intent. The user’s intent may simply be to explore information available on the web relating to one or more topics, for example, a user may simply wish to browse web sites relating to “rainforests” without having any specific purpose in mind. Commonly, however, a user has a more focused purpose in mind. By entering a “rainforest” query, a user may wish to obtain information on traveling to a rainforest, or on purchasing CDs or books having rainforests as a subject or purchasing rainforest themed merchandise such as clothing or accessories.

Id. at 3:46–57.

40. While other search engines existing at the time could tailor search results by ranking the results and displaying each result with a title and brief abstract taken from the document, the '157 patent explains how “results could be significantly enhanced if the likely intent of the query is known.” *Id.* at 4:16–17. Rather than return all documents having matching keywords—i.e., by using traditional indexing methods—a narrower set of results can be returned if the search results are “ranked such that results that are more relevant to the user’s intent appear at or near the top of the search results.” *Id.* at 4:17–19. Interpretation of the result set is further improved because the results display may be customized based on the user’s search intent. *See id.* at 19–26.

41. Indeed, the claims of the '157 patent provide just such a solution to the problem of identifying relevant search results using traditional document indexing methods. For example, Claim 1 of the '157 patent discloses a method comprising:

receiving, over a network, a query from a user, the query comprising at least one query token;
analyzing the query, using at least one computing device, to identify at least one query keyword;
determining, at least the one computing device, ***a plurality of intents from the at least one keyword***, each of the plurality of intents indicates a type of information regarding the query keyword that is likely to be desired by a user submitting the query;
classifying the query, using the at least one computing device, ***into at least one of the plurality of intents***;
identifying, using the at least one computing device, a plurality of data objects available over the network that match the at least one query keyword;
assigning, using the at least one computing device, ***at least one of the plurality of intents*** to at least some of the plurality of data objects;
ranking, using the at least one computing device, the plurality of data objects;

building a result, using the at least one computing device, using the ranked plurality of data objects, the result comprises a plurality of display entries, *at least one display entry customized to a respective assigned intent is constructed for each of the ranked plurality of data objects*; and transmitting the result, over the network, to the user. (emphasis added).

42. The inventions described and claimed in the '157 patent improve the speed, efficiency, effectiveness, and functionality of computer systems. Moreover, the inventions provide an improvement in computer functionality rather than economic or other tasks for which a computer is used in its ordinary capacity. For example, by ranking documents based on intent, rather than using “a traditional {query,document} score,” the probability is greater that a relevant result will be in the final result set presented to the user. *See id.* at 12:7–22. This reduces the number of queries that must be processed in order to return relevant results to the user. As a result, the processor is free to allocate more resources to other tasks.

43. In essence, each of the patents-in-suit relates to novel and non-obvious inventions in the fields of search engines, database structures, and graphical user interfaces.

COUNT I INFRINGEMENT OF U.S. PATENT NO. 7,698,329

44. R2 Solutions incorporates paragraphs 1–24, 27–32, and 43 herein by reference.

45. This cause of action arises under the patent laws of the United States, and in particular, 35 U.S.C. §§ 271, *et seq.*

46. R2 Solutions is the owner of the '329 patent with all substantial rights to the '329 patent, including the exclusive right to enforce, sue, and recover damages for past and future infringements.

47. The '329 patent is valid and enforceable and was duly issued in full compliance with Title 35 of the United States Code.

Direct Infringement (35 U.S.C. § 271(a))

48. Expedia Group has directly infringed and continues to directly infringe one or more claims of the '329 patent in this District and elsewhere in Texas and the United States.

49. To this end, Expedia Group has infringed and continues to infringe, either using its own name or under the banner of its brands and business units, at least claims 1 and 4–5 of the '329 patent by, among other things, making, offering to sell, selling, testing and/or using the Expedia.com search engine.

50. Attached hereto as Ex. 5, and incorporated herein by reference, is a representative claim chart detailing how Expedia Group infringes the '329 patent.

51. Expedia Group is liable for its infringements of the '329 patent pursuant to 35 U.S.C. § 271.

Damages

52. R2 Solutions has been damaged as a result of Expedia Group's infringing conduct described in this Count. Expedia Group is, thus, liable to R2 Solutions in an amount that adequately compensates it for Expedia Group's infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT II
INFRINGEMENT OF U.S. PATENT NO. 8,190,610

53. R2 Solutions incorporates paragraphs 1–23, 25, 27–28, 33–38, and 43 herein by reference.

54. This cause of action arises under the patent laws of the United States, and in particular, 35 U.S.C. §§ 271, *et seq.*

55. R2 Solutions is the owner of the '610 patent with all substantial rights to the '610 patent, including the exclusive right to enforce, sue, and recover damages for past and future infringements.

56. The '610 patent is valid and enforceable and was duly issued in full compliance with Title 35 of the United States Code.

Direct Infringement (35 U.S.C. § 271(a))

57. Expedia Group has directly infringed and continues to directly infringe one or more claims of the '610 patent in this District and elsewhere in Texas and the United States.

58. To this end, Expedia Group has infringed and continues to infringe, either using its own name or under the banner of its brands and business units, at least claims 1–5, 17–21, 33–34, and 40–41 of the '610 patent by, among other things, making, offering to sell, selling, testing and/or using the Expedia Group data analytics system built on Apache Hadoop.

59. Attached hereto as Ex. 6, and incorporated herein by reference, is a representative claim chart detailing how Expedia Group infringes the '610 patent.

60. Expedia Group is liable for its infringements of the '610 patent pursuant to 35 U.S.C. § 271.

Damages

61. R2 Solutions has been damaged as a result of Expedia Group's infringing conduct described in this Count. Expedia Group is, thus, liable to R2 Solutions in an amount that adequately compensates it for Expedia Group's infringements, which, by law, cannot be less than

a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT III
INFRINGEMENT OF U.S. PATENT NO. 8,341,157

62. R2 Solutions incorporates paragraphs 1–23, 26–28, and 39–43 herein by reference.

63. This cause of action arises under the patent laws of the United States, and in particular, 35 U.S.C. §§ 271, *et seq.*

64. R2 Solutions is the owner of the '157 patent with all substantial rights to the '157 patent, including the exclusive right to enforce, sue, and recover damages for past and future infringements.

65. The '157 patent is valid and enforceable and was duly issued in full compliance with Title 35 of the United States Code.

Direct Infringement (35 U.S.C. § 271(a))

66. Expedia Group has directly infringed and continues to directly infringe, either using its own name or under the banner of its brands and business units, one or more claims of the '157 patent in this District and elsewhere in Texas and the United States.

67. To this end, Expedia Group has infringed and continues to infringe, either by itself or via an agent, at least claims 1–5 and 11 of the '157 patent by, among other things, making, offering to sell, selling, testing and/or using the Travelocity.com search engine.

68. Attached hereto as Ex. 7, and incorporated herein by reference, is a representative claim chart detailing how Expedia Group infringes the '157 patent.

69. Expedia Group is liable for its infringements of the '157 patent pursuant to 35 U.S.C. § 271.

Indirect Infringement (35 U.S.C. § 271(b), (c))

70. Expedia Group has knowledge of the '157 patent at least based on the filing and service of this Complaint.

71. Despite having knowledge of the '157 patent, Expedia Group has specifically intended, and continues to specifically intend, for persons (including its customers and end users) to access the Travelocity.com website and use the Travelocity.com search engine (which is stored on one or more computer readable media) such that those persons (including customers and end users) infringe claim 2 of the '157 patent. This is evident when Expedia Group encourages and instructs persons (including customers and end users) in the use and operation of the Expedia Group application, including the use of the search feature.

72. In particular, despite having knowledge of the '157 patent, Expedia Group has provided, and continues to provide, instructional materials that specifically teach and encourage persons (including customers and end users) to use the Travelocity.com website in an infringing manner. *See, e.g.*, <https://www.travelocity.com/> (prominently placing the search bar on the home page, and beckoning users to “search by destination, accommodations, or landmark” by placing the phrase “Where are you going?” in the search bar); *see also* Reid Bramblett, *The New "Big Three" of Travel Search Engines: Competition Dies*, FROMMER’S, <https://www.frommers.com/tips/airfare/the-new-big-three-of-travel-bookings-competition-dies-among-search-engines-too> (“Now when you search Travelocity, the results are identical to those at Expedia Group, which means all Travelocity really brings to the table is one highly annoying gnome.”). By providing such instructions, Expedia Group knows (and has known), or should know (and should have known), that its actions have actively induced, and continue to actively induce, infringement. Expedia Group is, thus, liable for induced infringement under 35 U.S.C. § 271(b).

Damages

73. R2 Solutions has been damaged as a result of Expedia Group's infringing conduct described in this Count. Expedia Group is, thus, liable to R2 Solutions in an amount that adequately compensates it for Expedia Group's infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

DEMAND FOR A JURY TRIAL

R2 Solutions demands a trial by jury on all issues triable of right by jury pursuant to Rule 38 of the Federal Rules of Civil Procedure.

PRAYER FOR RELIEF

R2 Solutions respectfully requests that this Court enter judgment in its favor and grant the following relief:

- (i) Judgment and Order that Expedia Group has directly infringed one or more claims of each of the patents-in-suit;
- (ii) Judgment and Order that Expedia Group has indirectly infringed one or more claims of the '157 patent;
- (iii) Judgment and Order that Expedia Group must pay R2 Solutions past and future damages under 35 U.S.C. § 284, including supplemental damages arising from any continuing, post-verdict infringement for the time between trial and entry of the final judgment, together with an accounting, as needed, as provided under 35 U.S.C. § 284;
- (iv) Judgment and Order that Expedia Group must pay R2 Solutions reasonable ongoing royalties on a go-forward basis after Final Judgment;

- (v) Judgment and Order that Expedia Group must pay R2 Solutions pre-judgment and post-judgment interest on the damages award;
- (vi) Judgment and Order that Expedia Group must pay R2 Solutions' costs;
- (vii) Judgment and Order that the Court find this case exceptional under the provisions of 35 U.S.C. § 285 and accordingly order Expedia Group to pay R2 Solutions' attorneys' fees; and
- (viii) Such other and further relief as the Court may deem just and proper.

Dated: June 17, 2021

Respectfully submitted,

/s/ Edward R. Nelson III

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